UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,535	01/30/2004	Milton E. Moskowitz	H0005134- -1623	8642

	EXAMINER
128　　7590　　04/09/2007 HONEYWELL INTERNATIONAL INC. 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245	VU, TUAN A

ART UNIT	PAPER NUMBER
2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

		Application No.	Applicant(s)
Office Action Summary		10/769,535	MOSKOWITZ ET AL.
		Examiner	Art Unit	
		Tuan A. Vu	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 January 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/30/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/12/06*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

    Office Action Summary

DETAILED ACTION

1.   This action is responsive to the application filed 1/30/04.

         Claims 1-20 have been submitted for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new
> and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 1-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

> The Federal Circuit has recently applied the practical application test in determining whether the claimed subject matter
> is statutory under 35 U.S.C. § 101. The practical application test requires that a " useful, concrete, and tangible result" be
> accomplished. An "abstract idea" when practically applied is eligible for a patent. As a consequence, an invention, which is
> eligible for patenting under 35 U.S.C. § 101, is in the "useful arts" when it is a machine, manufacture, process or composition of
> matter, which produces a concrete, tangible, and useful result. The test for practical application is thus to determine whether the
> claimed invention produces a "useful, concrete and tangible result".

         The current focus of the Patent Office in regard to statutory inventions under 35 U.S.C. § 101 for method

claims and claims that recite a judicial exception (software) is that the claimed invention recite a practical

application. Practical application can be provided by a physical transformation or a useful, concrete and tangible

result. The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO)

policy on 35 U.S.C. §101.

<http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf>

         Specifically, claims 1 and 7 recite 'comparing the generated code ... to determine if

includes all the lines ... computer code' and 'compares the generated code ... to determine if ...

all the lines ... computer code', respectively (li. 6, cl. 1; li. 8, cl. 7). The mere fact of comparing

for a determination amounts to yielding a determination result, which cannot be construed as an

externalized application-level output suggestive of a tangible form from executing a computer

application or real-world data transformation. That is, determination from a computer comparing

process remains internal and <u>abstract</u> within the low level of computer process, thus not result

from a transformation being externalized into a tangible, concrete and useful form, according to

the Guidelines statutory requirements as set forth above. The claims for failing to reasonably

convey realization of a tangible according to the Practical Application test requirement will be

rejected for leading to a non-statutory subject matter.

Claims 2-6, 8-11 are rejected for not remedying to the abstract result deficiency of the

base claims are also rejected as leading to non-statutory subject matter.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

5.   Claims 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed

invention.

Specifically, claim 19 recites 'model of an aircraft control systems' and from the

Disclosure, there is no apparent teaching of any *aircraft control* systems represented by a *model*

in the verification process described in the *Simulink* program of Fig. 1-4.

Claim 20 recites limitation 'comparison satisfies DO-178B' but this *DO-178B* in the

context of a satisfying step is nowhere described in the Disclosure. The Specifications gives

examples of Simulink applications in *Avionics* and document DO-178B as compliance standard

for verifying FAA applications in the BACKGROUND (pg. 2) section. However, Background

examples cannot be treated as part of the invention when the invention (i.e. disclosure thereof)

does not provide explicit, substantial evidence as to (i) how the recited limitations has been

implemented or (ii) whether the above examples are to be treated as being deliberately and

explicitly included (emphasis added – e.g. incorporated by reference) in the Description of the

invention.

The above limitations will not be given patentable weight, hence will be treated as mere

examples of little merit in the context of verifying source code.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Charisius et al,

USPN: 6,983,446 (hereinafter Charisius).

As per claim 1, Charisius discloses a method for verifying a generated computer code

having a plurality of lines generated from a model of a system comprising: processing the model

to determine an expected computer code having a plurality of lines based on the model (e.g. Fig.

3; Fig. 13-14 – Note: language neutral representation of a graphical model constructs having

templatized definitions – see col. 5, lines 61-64; col. 6, lines 12-22; Fig. 5; *definitions,*

templates, Fig. 8,col. 7, lines 63 to col. 8, line 21; Fig. 19A, 20A – reads on plurality of lines);

and comparing the generated computer code (e.g. Fig. 4; Fig. 19B-C) to the expected computer

code to determine if the generated computer code includes all of the lines (e.g. *synchronized ...*

updated automatically – col. 5, lines 34-60) of the expected computer code.

As per claims 2-4, Charisius discloses verify each of the lines of the generated computer

code is in a proper format (e.g. coding styles – Fig. 19A; col. 20-31 – Note: Audit tool to check

source construction line by line code style against auditing rules – see Fig. 19C -- reads on

proper format); to determine if the generated computer code includes any line of code not in the

expected computer code (*synchronized ... updated automatically* – col. 5, lines 34-60; Fig. 20B);

to determine if the lines of the generated computer code are in a logical order (e.g. Table 1, Table

2, table 3, table 4, col. 10-12; Fig. 19b, 19C; col. 4 line 66 to col. 5, line 9).

As per claim 5, Charisius discloses comparing a header information section of the

generated computer code to an expected header information section to determine if the header

information section of the generated computer code matches the expected header information

(e.g. *Declaration* – cols. 25-26; match a declaration, col. 37, lines 1-37- Note: generated source

code or class package declaration with respect to expected declaration in OO class or Use case

package – see Fig. 14-15, 22 -- in an *audit* instance reads on comparing header of a class

signature declaration)

As per claim 6, Charisius discloses comparing a generated declared variable section of

the generated computer code to an expected declared variable section of an expected computer

code to determine if the generated declared variables section matches the expected declared

variable section (e.g. Figs 19; Declaration Style -col. 31-35; Naming style, Performance – col. 36-39).

As per claim 7, Charisius discloses a computer-readable storage medium containing a set of instructions for verifying a generated computer code having a plurality of lines, the generated computer code automatically generated from a model of a system, the set of instructions comprising:

code that reads in a model file; code that determines an expected computer code having a plurality of lines based on the model file (e.g. Fig. 3; Fig. 13-14; col. 5, lines 61-64; col. 6, lines 12-22; Fig. 5; *definitions, templates*, Fig. 8,col. 7, lines 63 to col. 8, line 21; Fig. 19A); code that reads in the generated computer code; and code that compares the generated computer code (e.g. Fig. 4; Fig. 19B-C) to the expected computer code to determine if the generated computer code includes all the lines (e.g. *synchronized ... updated automatically* – col. 5, lines 34-60) of the expected computer code.

As per claims 8-10, refer to claims 2-4, respectively.

As per claim 11, Charisius discloses a header information (Note: signature of a OO Class reads on a formal header declaration – see cols. 25-26) section of the generated computer code to an expected header information section to determine if the header information section of the generated computer code matches the expected header information (e.g. *Declaration* – cols. 25-26; *match a declaration*, col. 37, lines 1-37- Note: generated source code or class package declaration with respect to expected declaration in OO class or Use case package – see Fig. 14-15, 22 -- in an *audit* instance reads on comparing header of a class signature declaration).

As per claim 12, Charisius discloses a system for verifying the contents of a generated

computer code generated from a model comprising:

a processor operable to compare the generated computer code with an expected computer

code, the expected computer code (Fig. 3; Fig. 13-14; col. 5, lines 61-64; col. 6, lines 12-22; Fig.

5; *definitions, templates*, Fig. 8,col. 7, lines 63 to col. 8, line 21; Fig. 19A) determined by the

processor from the model; and

a display coupled to the processor, the display displaying a result of the comparisons

(Fig. 13, 19B-C; Fig. 20A-B).

As per claims 13-14, Charisius discloses wherein the results of the comparison indicates

if the generated computer code has all of the content of the expected computer code (e.g. Fig.

8A-B; Fig. 20; *synchronized ... updated automatically* – col. 5, lines 34-60); wherein the results

of the comparison indicates if the generated computer code has any additional content not found

in the expected computer code (e.g. col. 5, lines 34-60– Note: auditing tool to match each

constructs of the lines of code with format required for OO syntax construction based on

template and graphical representation – see Figs 11, 19, 20 – maps with indication as to any

additional content is not found – see *update view* Fig. 9; *incremental code editor* – Fig. 7).

As per claims 15-17, refer to claims 2-4, respectively.

As per claim 18, refer to claim 5.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable under Charisius

et al, USPN: 6,983,446; further in view of Tudor, USPubN: 2004/0210873(hereinafter Tudor)

and APA (Admitted Prior Art- see Background, pg. 2).

As per claims 19-20, Charisius' model-based GUI representation for verification of code

such as C++, Java with UML view of graphical flow (see Fig 12-14) is not disclosed as being a

model of an aircraft control systems, nor is the verification effected using the tool being based to

satisfy a DO-178B. But Tudor teaches verification of code based on static model like in

Charisius and mapping of graphical state or mathematical representation therefrom to a program

software being generated (see para 0006-0034, col. 1-3); and further teaches a *avionics* control

type of model (see AAA, para 0025, para 0031, Fig. 1, 4). Based on the teachings by Charisius'

state transitions in UML-based application being modeled to generate source code, suggestive of

the wide range of UML applicability in many domains of software development, it would have

been obvious for one skill in the art to use Charisius' model approach in an industrial application

like that in avionics control application as by Tudor, and based on Tudor (AAA - para 0025, para

0031) provide Charisius' verification of generated code against this Avionics state model

construct as mentioned above, making Charisius' tool more a industry and commerce-worthy

product. The compliance of Avionics model against some federal standard is not explicitly

taught in Tudor, but based on APA the use of Simulink like that of Tudor (see Tudor: para 0006)

can be utilized to operate under avionics compliance checking using standard like DO-178B.

Hence, the utilization of Charisius' tool to verify components of a avionics model in light of such

standard would also have been obvious in view of the teaching by Tudor combined with the

necessity to comply to DO-178B as taught by APA because in FAA, requirements in regard to

worthiness of airlines impose guidelines and standards without which application being

simulated cannot meet their expected industrial requirements, according to APA.

Conclusion

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tuan A Vu whose telephone number is (272) 272-3735. The

examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (571)272-3756.

The fax phone number for the organization where this application or proceeding is

assigned is (571) 273-3735 (for non-official correspondence - please consult Examiner before

using) or 571-273-8300 (for official correspondence) or redirected to customer service at 571-

272-3609.

Any inquiry of a general nature or relating to the status of this application should be

directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information
Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR
or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more
information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the
Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan A Vu
Patent Examiner,
Art Unit 2193
April 01, 2007